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STATE OF THE ART

The present invention concerns a driving authorization system, in particular for motor vehicles, with a vehicle-solid electronically codable recognition mechanism and an appropriate external electronic release mechanism bring inable thereln, whereby on recognition of the release mechanism by the recognition mechanism at least a vehicle-specific equipment is freigebbar.

Although applicably to arbitrary vehicles, the present invention as well as it the underlying problem become regarding a driving authorization system present on board a motor vehicle described.

For the increase of the security, in particular theft security, by motor vehicles it is to be equipped well-known, these with driving authorization systems with an electronic going away barrier.

For this a vehicle-solid electronically codable recognition mechanism is usually planned, which is freigebbar by means of an external, for example the mechanical vehicle key replacing, electronic release mechanism, a so-called transponder. ????besitzt ein Speicherelement??dem??notwendige Kodierung zur Freigabe der Erkennungseinrichtung abgelegt ist? So that the release mechanism with the recognition mechanism can communicate, this is to be positioned in proximity of the recognition mechanism, so that by the recognition mechanism, in particular over an antenna, radiated signal can be seized and processed by the release mechanism. The signal of the recognition mechanism is examined in the release mechanism and answered with an appropriate response signal, whose signal process must correspond to electronic coding of the recognition mechanism. If Sendesignal and response signal of the driving authorization system fit, a release takes place at least a vehicle-specific equipment of the vehicle, for example an electronic controller for the control of an internal-combustion engine of the vehicle.

Admits is to integrate the release mechanism into an ignition key. Here it is unfavorable that apart from electronic communication between the recognition mechanism and the release mechanism both the ignition key and an appropriate starter lock must exhibit appropriate form characteristics co-ordinated one on the other. Due to the multiplicity of different closing systems with ignition keys thereby a substantial expenditure is given with the integration of an electronic driving authorization system.

The supply of the driving authorization system initially specified additionally to a usual starter lock system creates likewise a increased expenditure.

ADVANTAGES OF THE INVENTION

The driving authorization system according to invention with the features of the claim 1 exhibits the advantage in relation to the well-known solutions that the driving authorization system can serve simultaneous also as starter lock system.

▲ top Those the present invention underlying idea consists of the fact that the recognition mechanism and/or. the card reader is provided with a mechanical rest mechanism, which fixing the release mechanism and/or. Card in at least one position, preferably the ignition in position, makes possible. From the solvable rest position the release mechanism can be pressed temporarly like a conventional ignition key into an engine initial position and returns when releasing after the engine start into the ignition in position, which corresponds to the operating position.

This mode of operation is from the user, who is accustomed a starter lock, favourable-proves easily comprehensibly. Favourable also the saving of an ignition key is as accessory, since its function is transferable by the release mechanism.

In the Unteransprüchen are favourable training further and improvements of the driving authorization system indicated in claim 1.

In accordance with a preferential further training position is the appropriate starter lock function the ignition in function and is the further position appropriate starter lock function the engine starting function.

In accordance with a further preferential further training the release mechanism is into at least still another further position solvable and lockable bringable, which is recognizable of the actuation equipment and into the actuation equipment an appropriate further starter lock function, preferably an ignition neutral function, releases.

In accordance with a further preferential further training a springy rest pin mechanism is is intended in the angle of photography, which cooperates also in the release mechanism planned notches for solvable locking of the release mechanism in the position.

In accordance with a further preferential further training the release mechanism is a smart card, which is importable by a slot into the angle of photography.

In accordance with a further preferential further training the actuation equipment exhibits at least a mechanical and/or optical position sensor for recognizing the release mechanism in the respective position.

In accordance with a further preferential further training the further position is attainable by pressure application on the release mechanism from a position up to reaching the abutment and is intended a spring mechanism, which leads back the release mechanism with omission of the pressure application into the one position.

In accordance with a further preferential further training the actuation equipment in at least one of the positions causes communication between the release mechanism and the recognition mechanism.

DESIGNS

Embodiments of the invention are represented and in the following description more near described in the designs.

Show:

Fig. 1 eine schematische Darstellung eines DES erfindungsgemässen Fahrberechtigungssystems mit?einer?einer? Ausführungsbeispiels ersten?befindlichen Chipkarte???;

Fig. 2 a schematic display of an embodiment of the driving authorization system according to invention with a smart card in a second position II;

Fig. 3 a schematic display of an embodiment of the driving authorization system according to invention with a smart card in a third position III;

Fig. 4 a schematic Perspektivansicht of a usual photograph device;

Fig. 5 a schematic plan view on the usual photograph device in accordance with Fig. 4;

Fig. 6 a profile by the usual photograph device in accordance with Fig. 4; and

Fig. 7 a cross section by the usual photograph device in accordance with Fig. 4.

DESCRIPTION OF THE EMBODIMENTS

In the figures same reference symbols designate same or function-same elements.

To assist in the understanding that the present invention underlying problem becomes first with reference to Fig. describes 4 to 7 a driving authorization system, which in the earlier application DE 197 47 732,1 of is revealed to 29.10.97 and serves as starting point for the present invention.

In Fig. a photograph device 10 such of a usual driving authorization system for motor vehicles is shown 4. The following description refers to the structure and the function of the photograph device 10, whereby it is clear that this is arranged in suitable place in the motor vehicle, for example at and/or in an instrument panel of the motor vehicle.

The photograph device 10 possesses a cuboid base 12, in which an angle of photography 14 is trained. The angle of photography 14 is formed by a bag opening 16, essentially over the entire depth of the base 12 extends. At a front 18 the bag opening 16 provided with a slot 20 is, so that this is to the front 18 edge open. In plan view seen the bag opening 16 possesses a cross section, which is formed by a central section 22 and side sections 24 and/or 26. In the range of the central section 22 the slot 20 is arranged, like in particular in in Fig. 5 schematic plan view shown on the photograph device 10 becomes clear. As a result of the sections 22, 24 and 26 it arises that the bag opening 16 is formed by a slot-like indentation, which exhibits an expansion of certain outline within the range of the central section 22. The outline of the central section 22 depends on the shaping of used release mechanisms. Formed in the example shown the central section 22 of one eight-hit a corner. This can be however also differently arranged polygon, oval, in a circle, dreieckförmig and so on.

Like the plan view in Fig. explanation, the photograph device 10 furthermore an antenna 28, which serve communication with a release mechanism bring inable into the angle of photography 14, possesses 5. The antenna 28 is laid out to the replacement of high frequency signals. An actuation equipment 30 is assigned furthermore to the angle of photography 14, which exhibits axially a means of actuation 32 running for bag opening 16, which is against the force at least one spring element 34 radially for bag opening 16 shiftable. In a state of rest the means of actuation 32 in the transient area between the central section 22 and 3 is appropriate for the side section 26 of the bag opening 16.

Into the Fig. the structure of the photograph device 10 is continued to clarify to 6 and 7 on the basis a along and/or a cross section. There the photograph device 10 shown with a pushed in electronic release mechanism 36 is, those for example from a smart card 38, like Fig. 5 in a schematic Perspektivansicht explanation, formed to be can do. The geometrical design of the release mechanism 36 is here particular-proves a smart card 38, which can correspond cut to the motor vehicle its or to the general well-known format of calling cards and bank cards. The bag opening 16, in particular the side sections 24 and 26 are co-ordinated here with the thickness of the smart card 38, so that this is play-poor into the bag opening 16 bring inable. The release mechanism 36 does not exhibit electronic circuits represented more near, by means of which over the HF-antenna 28 communication with the recognition mechanism is possible. For this the photograph device knows 10 more near likewise not represented circuit components, for example in the form of micro-control-learns, memories and so on to possess.

By insertion of the release mechanism 36 into the bag opening 16 the means of actuation 32 is shifted against the force of the spring elements 34. Like the sectional view Fig. 6 explanation, is arranged the spring elements 34 not symmetric to the operating means 32, but is not in a lower range of the bag opening 16. By the asymmetrical storage of the means of actuation 32 by means of the spring elements 34 this is preferably designed as tumbling plate. Thereby it is reached that with insertion of the release mechanism 36 the means of actuation 32 is shifted not immediately over its entire length against the force of the spring elements 34. With beginning of the insertion of the release mechanism 36 first the upper section of the means of actuation 32 is shifted against the force of the spring element 34, so that a first Schaltmittel 40, whose trip pin 42 lies in the movement of the means of actuation 32, becomes, actuated. Only with

almost complete Insertion of the release mechanism 36 also the lower section of the means of actuation 32 is shifted against the force of the spring elements 34, so that then a second Schaltmittel 44, whose trip pin 46 likewise lies in the movement of the means of actuation 32, is operatable. To the easier Insertion of the release mechanism 36 a phase 48 can be intended in the range of the delta of the bag opening 16. The Schaltmittel 40 and 44 are connected by connections not represented more near with electronics of the photograph device 10 and/or the driving authorization system. This electronics can be integrated either in the photograph device 10 or at other place, for example in a controller of the motor vehicle.

By the Independently operatable Schaltmittel the positioning of the release mechanism 36 can 40 and 44 be detected. With insertion of the release mechanism 36 first the Schaltmittel 40 becomes and only with reaching the final position the Schaltmittel 44 actuated. Thus reaching the final position of the release mechanism 36 can be detected over actuation of the Schaltmittels 44. To the actuation of the Schaltmittels 44 a release of the inquiry of the transponder integrated into the release mechanism 36 can be coupled. For example thereby electronics of the recognition mechanism can head for the antenna 28, which thereupon with the transponder into communication and examines over a code inquiry the authorization of the brought in release mechanism 36 steps. If the authorization of the release mechanism 36 is recognized, a start-up of the motor vehicle, for example by deactivation to an electronic going away barrier, can be permitted making a supply voltage available to starting the motor vehicle and so on over electronics.

During the enterprise of the motor vehicle the release mechanism 36 in the photograph device 10 remains. Here this becomes over the means of actuation 32, by which spring action at least spring element 34, with a retaining strength beaufachlagt, so that unintentional falling out is not possible due to during the enterprise of the motor vehicle of arising vibrations. Simultaneous one can be examined by the construction of the slot 20 at any time the position-fair situation of the release mechanism 36. Furthermore can by slot 20 reached that, if the release mechanism 36 is appropriate for example at a key federation, on which for example for the enterprise of the motor vehicle necessary keys or such a thing do not hang these at the key federation remain together can. Thus the release mechanism 36 into the photograph device 10 can be brought, without this from the key federation must be removed, since by the construction of the slot 20 an appropriate free space is available.

Also an indicator plant can be integrated, those after effected release of the start-up of the motor vehicle, for example by multi colour illuminated readouts into the photograph device 10, which validity of the used release mechanism 36 signals. Furthermore a mechanical locking can be intended, which keeps the release mechanism 36 in their position additional to the retaining strength applied over the spring element 34. In place of a mechanical locking for example also an electromagnetic locking can be intended. If the identifying of the release mechanism 36 took place and the start-up of the motor vehicle released, a starting of the driving motor of the motor vehicle becomes certified.

The use of an additional ignition key or such a thing is not necessary with this system. The starting procedure can suggest-proves either alone after releasing the Schaltmittels 44, i.e. become after reaching the final position of a release mechanism 36 in the photograph device 10 and after their successful identifying, automatically to run off or by means of a particular starting release contact, for example a feeler, turning scarf width unit or such a thing, by hand controlled.

According to the interpretation of the driving authorization system the enterprise of the driving motor of the motor vehicle can be interrupted by taking the release mechanism out of the photograph device 10 or not interrupted. When pulling the release mechanism out of the angle of photography first the Schaltmittel 44 and afterwards the Schaltmittel 40 opens 14. By opening the Schaltmittels 40 complete removing of the release mechanism 36 is recognized, so that over appropriate electronics a disconnection of the driving motor can be arranged. For safety reasons it can be intended that apart from removing the release mechanism 36 10 signals further from the photograph device must be available, which signal for example the stop of the motor vehicle, in order to stop the engine enterprise. For this for example number of revolutions values at the wheels or the transmission of the motor vehicle can be measured.

In place of the mechanical operatable Schaltmittel 40 and 44 can be intended also optically, electronically or in other suitable way operatable Schaltmittel.

By the construction of the angle of photography 14, in particular by the central section 22 it is guaranteed that the photograph device 10 simultaneous release mechanisms 36 arranged differently for the inset is suitable. So for example the release mechanism can exhibit an irregular oval form. This release mechanism 36 can be arranged for example by means of an eye at a key federation. Due to the relatively small compact design this is carryable in simple way with the key federation. An outside form shape of the release mechanism 36 then essentially corresponds to the cross section of the central section 22, so that the release mechanism is importable 36 in analog way like the smart card 38 into the photograph device 10 and comes over a longitudinal surface in plant contact with the means of actuation 32 and thus on the one hand the Schaltmittel can release 40 and 44 and on the other hand over the spring element 34 with a retaining strength is subjectable.

Here to a large extent no borders are set to the form shape of the release mechanism 36. Additionally the release mechanism can exhibit 36 Schaltmittel, which serve for example the Ent and locking operated by remote control of motor vehicle doors. For this infrared, ultrasonic, LF and/or UHF sending and - can be used receipt means.

The release mechanism 36 can be trained also as key fob (key fob), if the angle of photography 14 of the photograph device 10 exhibits an appropriate form shape.

Fig. 1 3 bis zeigen eine schematische Darstellung eines DES erfindungsgemässen Fahrberechtigungssystems mit?einer? einer?Ausführungsbeispiels ersten??I? II bzw? III smart card present.

Into the Fig. additionally the module/excerpt direction of the smart card 36, 50 a first optical position sensor, 52 a second optical position sensor, 54a and a 54b leaf springs, 60 a first rest pin, 61 a first rest pin feather/spring, 62 a second rest pin, 63 a second rest pin feather/spring, 70 a switching contact with a switching contact pin 70a, 80 and 82 spring mechanisms as well as 90 and 92 abutments marks 1 to 3 to the reference symbols P already introduced according to direction of arrow.

The driving authorization system for motor vehicles in accordance with this embodiment has in its recognition

mechanism a photograph device 10, which trains an angle of photography 14, in which the release mechanism 36 in form of the smart card in a position I and in a position II by the slot 20 solvable and lockable bring inable is.

The springy rest pin mechanism 60-63 planned in the angle of photography 14 cooperates with the notches 37, 38 planned in the release mechanism 36 for solvable locking of the release mechanism 36 in the positions I and II. A counter-pressure is applied by the leaf springs 54a, 54b. The mechanical slide mechanism perpendicularly to the layer is not shown for simplification reasons.

The actuation equipment planned in the angle of photography 14 points the optical position sensor 50 and/or. 52 for recognizing the release mechanism 36 in the respective position I and/or. II up.

The release mechanism 36 in the angle of photography 14 is bringable from the position II into a further position III, in which a flexible return force is put onable toward the position II for the resetting of the release mechanism. Like in particular Fig. 3 entnehmbar, is the further position III by pressure application, z. B. by the finger of a user at the slot, on which release mechanism 36 from position a II to a complete stop 90, 92 is attainable. The spring mechanism 80, is compressed 82 which leads back the release mechanism with omission of the pressure application into the position II.

A not represented electronics part of the actuation equipment planned in the angle of photography 14 solves one the respective position I, II and/or. III appropriate starter lock function as well as particular communication between the release mechanism 36 and the recognition mechanism in the position I out.

With this example the starter lock function of the position I is the ignition neutral function, the position II appropriate starter lock function the ignition in function and the position III appropriate starter lock function the engine starting function.

In the following becomes an example method the operation of the driving authorization system after Fig. 1 to 3 describes.

In accordance with Fig. 1 takes place first an insertion of the release mechanism 36 into the resting position I for activating the ignition neutral function, whereby the simultaneous identifying takes place and is freigebbar on recognition of the release mechanism 36 by the recognition mechanism a vehicle-specific equipment, for example electronic controller for the control of the internal-combustion engine of the vehicle and/or the current supply. With successful identifying z can. B. in this position, as usual, the radio current supply o. A. are released.

Pressing the release mechanism 36 into the resting position II leads to activating the ignition in function, D. h. lighting up the control lights for battery and oil level, the abs testing, pre-heating with the diesel engine etc.

Pressing the release mechanism 36 into the position III leads then to activating the engine starting function, D. h. Actuation of the starter, as long as the pressure application is maintained.

Terminating the pressure application after engine start by releasing the release mechanism 36 leads to the feedback into the position II, where the engine in enterprise is held.

Withdrawing the release mechanism 36 from the position II into the position I leads to the disconnection of ignition and engine. So that those does not happen inadvertently or so that with running engine inadvertently the starter does not become by movement into the position III again actuated, an additional separated solvable locking can be intended.

Finally a removing of the release mechanism 36 leads if necessary to activating the ignition out function and switching the engine off as well as. to the engagement of the going away check function.

Although the present invention was described managing on the basis a preferential embodiment, it is not limited to it, but to various way modifiably.

In particular the invention is not on the described mechanical rest mechanisms and/or. Position recognition mechanisms limits. Also only a solvable lockable position (z can. B. II) additionally to the initial position intended its, or three or more solvable lockable positions can be planned.

Also a key fob o can instead of the smart card. A. in place of an ignition key to be used.

Reference symbol list
10 photograph device
12 bases
14 angle of photography
16 bag opening
18 front
20 slot
22 central section
24 side section
26 side section
28 antenna
30 actuation equipment
32 means of actuation
34 spring element
36 release mechanism, smart card
37 first notch
38 second notch
40 first Schaltmittel
42 first trip pin
44 second Schaltmittel
46 second trip pin
48 phase

I, II, III positions release mechanism and/or. Smart card
P direction of arrow
50 first position sensor
52 second position sensor
60 first rest pin
61 first rest pin feather/spring
62 second rest pin
63 second rest pin feather/spring
70 switching contact
70a switching contact pin
80, 82 spring mechanisms
90, 92 abutments
54a, 54b leaf springs